

THE UNIVERD SHAYES OF AMERICA

To all to whom these presents shall come: Hisconsin Alumni Research Houndation

MUCCUS, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PRANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANTIS AND THE SUCCESSOR'S HEIRS OR ASSIGNS OF THE SAID APPLICANTIS) FOR THE TERM OF TWENTY HARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT, OF THE REQUIRED FEES AND PERIODIC REPOSITION OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITION AS PROVIDED BY LAW, THE SIGNED OF THERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE PLANT OF THE ABOVE TO GREEN OF THE PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

OAT

'Esker'

In Testimony Marcot, I have hereunto set my hand and caused the seal of the Hunt Institute Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of September, in the year two thousand and six.

Attost:

Commissioner

Commissioner Plant Variety Protection Office Saricultural Marketina Service ary of Agriculture

INSTRUCTIONS

200500132

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office Telephone: (301) 504-5518 FAX: (301) 504-5291

Homepage: http://www.ams.usda.gov/science/pvpo/pvpindex.htm

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 http://www.ams.usda.gov/lsg/seed.htm.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
- (2) the details of subsequent stages of selection and multiplication;
- (3) evidence of uniformity and stability; and
- (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
 - (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to descript your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
- 20. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
- 23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
- 24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.
- 22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)
- 23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

SOLD FOUNDATION SEED STOCKS TO CERTIFIED SEEDS GROWERS IN MARCH, 2004, USA.

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Exhibit A Esker Oat Wisconsin

EXHIBIT A: ORIGIN AND BREEDING HISTORY OF THE VARIETY

ESKER OAT (Wisconsin selection X8179-1)

The pedigree of Esker is:

Jim/Gem

The pedigree and chronology of crosses is diagrammed and shown in Figure 1.

Esker was developed by workers in the Department of Agronomy, University of Wisconsin-Madison, Madison, Wisconsin. The breeding history of Esker is unique in that (1) one of the progenitors was a 6X amphiploid from a tetraploid x diploid interploidy cross, and (2) irradiation with thermal neutrons in 1968 was a key step in stabilizing genes for crown (leaf) rust resistance from the Avena strigosa progenitor.

The final cross, Jim/Gem, was made in the 1994 spring greenhouse. Jim (MN89127) was a cultivar released by Minnesota, while Gem was a Wisconsin cultivar that was released in 1996 and contained the 6X amphiploid and irradiated material mentioned above.

The pedigree method of plant breeding was strictly followed and the chronology of progeny generations resulting from the final cross, Jim/Gem, is listed below:

1994 spring greenhouse
1994 field nursery row 18022
1995 field nursery row 10077
1996 field nursery row 7264
1997 field nursery row 5039
1998 field nursery row 3758

Individual panicles were selected from generations F_2 through F_4 . All plants in the 1998 F_5 line (row) 3758 were cut and threshed in bulk. This population was tested as selection X8179-1, which ultimately became Esker.

X8179-1 (F ₆)	1999: Preliminary yield trial at Madison (triplicated late-maturity series)
X8179-1 (F ₇)	2000: Advanced to main Madison performance trial, the Wisconsin statewide trials, and a small single plot increase (SPI)
X8179-1	2001: Continued in the Madison trial and the Wisconsin statewide trials, advanced to the drill plots (5 ft. x 40 ft. plots, four replications), and entered in the USDA Uniform Midseason Oat Performance Nursery (a large multi-state trial).
X8179-1	2002: Breeders Seed increase
X8179-1	2003: Foundation Seed increase
X8179-1	2004: Certified seed production; named Esker

The primary selection criteria, in the F₂ population and in later generations, were resistance to crown (leaf) rust, productive agronomic traits such as yield, and high grain (kernel) quality as measured by test weight, groat percentage, and kernel and groat characteristics.

Traits that were closely monitored in all performance trials were grain yield, test weight, straw strength, maturity, response to diseases, especially crown rust and barley yellow dwarf virus (BYDV), and grain quality factors such as groat percentage and groat protein percentage. High yields, good test weights, good resistance to crown rust, and good tolerance to BYDV all characterized the performance X8179-1 (Esker).

The field of Breeders Seed increase (2002) and the Foundation Seed production field (2003) were inspected repeatedly by the foundation seed program field inspectors. Esker has demonstrated stability for all phenotypic and genotypic plant characteristics consistent with normal environmental influences. A slightly lighter green color, in relation to the entire population, has been observed on the panicles of some plants just after heading. This very slight color difference has been consistent and at a frequency of less than 1 percent. This difference also disappears after a few days.

The kernels of Esker are well filled, yellow in color, and nonfluorescent.

Esker has been uniform and stable, and has had no "variants" or "off-types", other than the slight color variation noted above, since the line was advanced to the main performance trial at Madison in 2000. At that time it was an F₇ and has since been grown an additional four generations through 2004.

The variety name "Esker" was checked with USDA, prior to naming and release, and it was indicated at that time that there were no known conflicts with other variety names.

The slight color Variation is a Variant.

correspondence of 7/14/06
MAH 7/14/06

Figure 1. Pedigree and chronology of crosses for Esker oat.

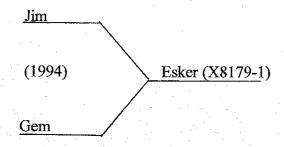


Exhibit B Esker Oat Wisconsin

EXHIBIT B: NOVELTY STATEMENT

Esker is most similar to the previously existing variety Moraine. Esker and Moraine are very similar in maturity and have some common ancestors in their backgrounds. Esker differs from Moraine as follows:

Esker has been consistently, significantly shorter than Moraine as indicated in the height (inches) readings given in the table below. The data is taken from trials grown at the indicated locations in Wisconsin during 2003 and 2004.

2003 data:

	Arlington	Chilton	Lancaster	Marshfield	Sturgeon Bay
Moraine	49.5	38.0	42.8	34.0	38.0
<u>Esker</u>	46.0	35.5	40.5	30.5	34.3
Ht. diff.	3.5	2.5	2.3	3.5	3.7
Entries	24	34	34	34	34
Reps	4	4	4	4	4
L.S.D0:	5 1.73	1.44	1.34	2.26	2.02
C.V. %	2.60	2.84	2.29	5.13	3.97

2004 data:

	Arlington	Marshfield	Sturgeon Bay
Moraine	55.0	50.0	48.8
Esker	<u>49.5</u>	<u>45.3</u>	<u>45.8</u>
Ht. diff.	5.5	4.7	3.0
Entries	24	34	34
Reps	4	4.	4
L.S.D03	5 2.14	2,49	2.57
C.V. %	2.93	3.71	3.90

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE

BELTSVILLE, MARYLAND 20705
OBJECTIVE DESCRIPTION OF VARIETY
OAT
(Avena spp.)

NAME OF ASSISTANCE (Avena spp.)	
NAME OF APPLICANT(S) Wisconsin Alumni Research Foundation	ESKER (XB/79-1)
ADDRESS (Street and No., or R.F.D.No., City, State, and ZIP Code)	FOR OFFICIAL LICE ONLY
614 North Walnut Street	FOR OFFICIAL USE ONLY PVPO NUMBER
P.O. Box 7365	270 A A A A A A A A A A A A A A A A A A A
Madison, Wisconsin 53707-7365	200500132
Place the appropriate number that describes the varietal character of this variety in the boxes belo Place a zero in first box (e.g. 089 or 09) when number is either 99 or less.	w.
1. SPECIES:	
1 = SATIVA 2 = BYZANTINA 3 = OTHER (Specify)	
2. GROWTH HABIT:	
3 1 = WINTER 2 = SEMIWINTER 3 = SPRING	
	46
JUVENILE GROWTH: 1 = PROSTRATE 2 = SEMIPROSTRATE	3 = ERECT
STANDARD VARIETIES	
1 = JAYCEE 2 = CLINTLAND 64 3 = CAYUSE 4 = NORLINI	5 = YANCEY
4-NOREM	5 = YANCEY 6 = FLORIDA 501
3. MATURITY (50% flowering): BELLE	DANE
0 4 DAYS EARLIER THAN STANDARD VARIETY U DA	YS LATER THAN STANDARD VARIETY
	STATEM TRAIN
3 Season: 1 = VERY EARLY (Jaycee) 2 = EARLY (Nodaway 70)	3 = MIDSEASON (Clintford)
4 = LATE (Lodi) 5 = VERY LATE (Garry)	6 = EXTREMELY LATE (Mackinaw)
4. PLANT HEIGHT (From soil level to top of head):	
	~ VISTA
0 9 6 CM. TALL 0 8 CM. SHO	RTERTHAN STANDARD VARIETY
	DANE
O 4 CM TAL	LER THAN STANDARD VARIETY
5. STEM:	
DIAMETER: 1 = FINE (Kherson) 2 = MEDIUM (Clintford)	3 = COARSE (Nodaway 70)
2 HAIRINESS AT UPPER CULM NODES: 1 = HAIRLESS	2 - 114/07
	2 = HAIRY
MATURE STEM COLOR: 1 = YELLOW	2 = REDDISH
O APAF B. LOL TO D. T. D.	
6. LEAF: (Leaf Color: The Royal Horticultural Society's or any recognized color chart should be	used to determine the leaf color of the described variety.
2 CARRIAGE: 1 = DROOPING (Random) 2 = ERECT (Walken)	
2 COLOR: 1 = YELLOW GREEN 2 = LT. GREEN	3 = DK, GREEN 4 = BLUE GREEN
/ 6 MM. WIDTH (First leaf below flag leaf) / LEAF MARGI	N: 1 = GLABROUS 2 = CILIATE
2 LIGULE: 1 = ABSENT 2 = PRESENT / LEAF SHEAT	H: 1 = HAIRLESS 2 = HAIRY
La Grand Street	2 10117
7. HEAD:	
PANICLE SHAPE: 1 = EQUILATERAL 2 = INTERMEDIATE	
FANICLE SHAPE: 1 = EQUILATERAL 2 = INTERMEDIATE	3 = SIDE PANICLE (Unitateral)
ATTACHMENT OF LOWER WHORL OF BRANCHES: 1 = FIRST NODE	2 = SECOND NODE (False node)
2 PANICLE SIZE: 1 = SMALL (Yancey) 2 = MEDIUM (Walken)	3 = LARGE (Markton)
2 PANICLE WIDTH: 1 = NARROW (Gopher) 2 = MIDBROAD (Yancey)	3 = BROAD (Nodaway 70)
09 cm. PANICLE LENGTH 26 NUMBER OF BRANCHES	NUMBER OF WHORLS OF BRANCHES
2 POSITION OF BRANCHES: 1 = ASCENDING (Yancey) 2 = SPREADING (Ca	
4 = PECTINATE (White Tartar) 5 = CONFUSED (Stor	

	8. RACHIS:			J	005 00	4 7 A
	2 1 = RECURVED (Yancey) 2 = ERECT (Walken)	2 B MM.		00500	EGMENT LENGTH
	SECOND FLORET RACH	HILLA SEGMENT: 1 = HAIRLESS 2 = HAIRY	RAC	HILLA HAIRS:	1 = SHORT	2 = LONG
	9. SPIKELET:				· · · · · · · · · · · · · · · · · · ·	
	3 SPIKELET SEPARATION	BY: 1 = ARCCISCION				•
	1 FLORET SEPARATION E	•	2 = SEMIABSCIS		3 = FRACTU	RE
		22211011	2 = HETEROFR	ACTURE	3 = BASIFRA	CTURE
-	<u></u>					
	10. GLUMES: (Glume Color: The Re	oyal Horticultural Society's or any reco	gnized color chart s	hould be used to	determine the col	or of the described va
 	08 MM. WIDTH 2	2 MM. LENGTH 09	NO. OF VEINS O		r—-	= WWITE 9 - VELL
	11. LEMMA: (Lemma Color: The Ro	yal Horticultural Society's or any reco	gnized color charts	hould be used to	determine the col	or of the described var
	15 MM. LENGTH		[6]		YELLOW 3=	
	/ HAIRINESS OF DORSAL	SURFACE: 1 = HAIRLESS	<u></u>	4≖GRAY 5=	BLACK	
- -	12. AWN (First floret):	2 = HAIRY	-			· · · · · · · · · · · · · · · · · · ·
		SENT (Walken)	TYPE	: 1 = NON-TWI	STED 2 = TWI	STÉD
	2 = INF	FREQUENT (Yancey)	~		GENICULATE	
		MMON (Chiloco) EQUENT (Random)	28 MM.	AWN LENGTH		
	13. SEED:				· ·	
	2 FLORESCENCE UNDER U	ILTRAVIOLET LIGHT:	1 = FLORESCEN	T	2 = NON-FLOR	RESCENT
		SENT (Florida 501)	2 = A8SENT TO			VERAL (Lee)
		/ERAL TO NUMEROUS (Florilee)	5 = NUMEROUS		: * *	
	MM. BASAL HAIR LE	NGTH			¥ .	
	3 4 0 GMS. PER 1,000	SEEDS	24 MG. G	BROAT WEIGHT	(each)	•
	1 4 4 % GROAT PROT	EIN	059 %	GROAT OIL		· .
1	4. INSECTS: (0 = NOT TESTED, 1 =	= SUSCEPTIBLE, 2 = RESISTANT)				
		BLUEGRASS BILLBUG	GRAIN BUG (C. Sa	IVI) O NI	EMATODE (Type)	•*
		· · · · · · · · · · · · · · · · · · ·		٠		
	O GREEN BUG (Biotype)		OTHER (Specify)_			
15	5. DISEASE: (0 = NOT TESTED, 1	= SUSCEPTIBLE, 2 = RESISTANT)				
: '	O HALO BLIGHT	O POWDERY MILDEW	SEPTORIA LE	AF BLOTCH	SOIL-BOR	NE MOSIAC
· · · ·	O HELMINTHOSPORIUM LEAF BLOTCH	YELLOW DWARF VIRUS	VICTORIA BLI	GHT	OTHER (S)	•
: +				-	ഥ	· · · · · · · · · · · · · · · · · · ·
	SPECIFY RACES TESTED:	RACES SUSCEPTIBL	E		RACES RESIS	STANT
	X CROWN RUST			CR 13, 19	92, 181, 185	, 223, 225
	STEM RUST	NA 25, 27, 28, 55, 67		NA8, 1	6	
	COVERED SMUT		-			
	X LOOSE SMUT			BULK COL	LECTION GE MN AND IL	NERAL TO
16.	INDICATE VARIETY YOU BELIE	VE MOST CLOSELY TO RESEMBLE	THAT SUBMITTE	O:		
	CHARACTER	VARIETY	CHARACTE		.	VARIETY
	PLANT TILLERING	MORAINE	LEAF COLO	R	MOR	PAINE
	LEAF SIZE	SRUMLIN	LEAF CARR	IAGE		PAINE
	SEED COLOR	DRUMLIN	SEED SHAPE			57 A

Exhibit D Esker Oat Wisconsin

EXHIBIT D: ADDITIONAL DESCRIPTION OF ESKER

Esker is classified as <u>Avena sativa</u> L. Plants are intermediate in height with leaves of medium length. The open, equilateral panicle is intermediate in length and panicle branches droop slightly at maturity. Spikelets separate from their pedicles by fracture, and florets separate by disarticulation of these rachilla segments. Lemma are glabrous and awns are infrequent. The caryopsis (groat) is retained in the lemma and palea, and grain color is yellow. Esker is of midseason maturity.

An intent to release request was made to the WCIA Seed Certification Committee in spring of 2004, and upon approval, the first seed was distributed to Certified growers in late March, 2004. Yield and agronomic data for 2001, 2002, and 2003 are summarized in Tables 1 and 2 in the intent to release letter.

Wisconsin Oat Test Line X8179-1

Wisconsin oat test line X8179-1 has a pedigree of Jim / Gem. The final cross was made in the spring greenhouse at Madison in 1994. It has been tested statewide since 2000 and in the drill plot nursery since 2001. X8179-1 has also been an entry in the Uniform Midseason Oat Performance Nursery (UMOPN) in 2001, 2002, and 2003. This nursery is grown at many locations in the northern USA and southern Canada and measures range of adaptability over a wide growing area.

In statewide tests, X8179-1 has had consistently high grain yields, ranking 1st in 2003, 2002-2003, and 2001-2003. Test weights are similar to those of Gem, while heading date is about 1 day later than Moraine, and just slightly earlier than Ogle. Plant height is about an inch shorter than Gem and Drumlin. Lodging is less than Gem and Vista, but more than Belle and Dane. BYDV tolerance is comparable to that of Ogle. Crown rust resistance is good.

X8179-1 was entered in the Minnesota state-wide trials in 2003 and was one of the better performing entries in that multi-location test.

Breeders Seed was grown in 2002 and Foundation Seed in 2003 in anticipation of release as a new variety. The name "Esker" has been suggested and is awaiting approval.

Grain yields (bu/a) for nine oat varieties and Wisconsin test selection X8179-1 in trials at eight Wisconsin locations in 2001, 2002, and 2003. Table 1.

				-									
8-loc. mean	20	123.1	1118	109.8	122.6	112.4	108.0	110.1	114.4	111.5	110.8	113.5	2.7
Chilton	m	92.8	2.06	88.6	9.96	87.1	84.9	85.8	85.1	86.7	82.5	88.1	5.6
Sturgeon Bay	т	120.8	102.9	100.4	119.8	116.9	101.1	27.7	121.4	92.2	105.2	107.8	9.3
Spooner	2	81.2	76.3	80.8	87.7	6.62	78.1	79.4	79.6	83.1	78.1	80.4	9.1
Marsh- field	8	7.66	79.4	85.1	97.6	91.3	77.4	82.2	91.5	88.4	92.5	88.5	7.7
Lan- caster	т	126.2	114.3	109.1	129.8	107.9	105.9	111.5	117.9	116.8	120.7	116.0	7.5
Ash- land	-	100.3	106.7	94.2	114.3	95.7	79.8	102.1	101.7	102.9	104.9	100.3	12.0
Madison	m	144.4	134.7	124.2	137.4	130.1	129.2	130.5	126.9	130.5	129.8	131.8	6.1
Arl Drill Plots	m ·	182.6	163.7	167.8	172.4	161.0	168.7	166.6	163.6	168.5	151.5	166.6	5.4
Variety	No. of tests	X8179-1	Belle	Dane	Drumlin	Gem	Jim	Moraine	Ogle	Richard	Vista		L.S.D05

Table 2. Grain yield, agronomic, and disease characteristics for nine oat varieties

an 20	and Wisconsin test sel 2001, 2002, and 2003.	and 2003.	ection X8	179-1 in	multiple st	atewide t	and Wisconsin test selection X8179-1 in multiple statewide tests during 2001, 2002, and 2003.
Variety or Selection	Yield bu/a	Test wt. lbs/bu	Head	ii. iii	Lodging 0-100	BYDV 0-9	Crown rust 0-100
No. of tests	20	19	17	19	10	æ	2
X8179-1	123.1	36.1	6/26.2	37.7	44.1	4.5	7.7
Belle	111.8	36.6	7/01.3	38.6	30.3	4 8,	9
Dane	109.8	35.9	6/22.7	36.2	33.5	8.9	35.0
Drumlin	122.6	35.9	6/28.3	38.5	55.8	2.8	2.8
Gem	112.4	36.3	6/27.6	38.6	48.2	4.3	10.3
Jim	108.0	37.4	6/24.9	38.3	39.8	5.2	25.8
Moraine	110.1	36.4	6/25.3	40.3	46.9	5.2	5.8
Ogle	114.4	34.7	6/26.7	37.8	38.9	4.2	33.2
Richard	111.5	35.2	6/27.4	41.8	29.9	4.5	3.2
Vista	110.8	34.9	6/29.2	40.9	46.6	6.0	10.3
Mean	113.5	35.9	6/27.0	38.9	41.4	4.8	13.5



Wisconsin

Yield of Esker Oats Fater pare from Control (First Middle)

Fater (First Middle)

Fate

Esket IS A LICENSED VARIETY (PVPA 1994 APPLIED FOR)

Ask your seed dealer for Wisconsin Certified

For more information contact:
Small Grains Breeding Program
Department of Agronomy
College of Agricultural and Life Sciences
University of Wisconsin-Madison
1575 Linden Drive
Madison, WI 53706
(608)262–1390



Developed and Released by

Department of Agronomy
College of Agricultural and Life Sciences

A New, High-Yielding Mid-season Maturity Oat

Esker is a new high yielding oat variety developed at the University of Wisconsin–Madison. Esker is a mid-season maturity oat that heads about I day later than Moraine and about 3 days earlier than Drumlin. In 19 statewide trials (7 locations 3 years) during 2002–2004. Esker hadhigh average grain yields. These grain yields are summarized below and by individual locations on the back page. Esker is similar to Drumlin and Gem for test-weight, and slighily shorter than Drumlin for plant-height.

SEED AVAILABLE
FOR ONLFARM
PLANTING IN 2005
High Gram Yield
Good Test-Weight
Mid-season-Maturity
Resistant to Crown Rust

Agronomic Performance and Disease Characteristics of Esker Oats at Ag Research Stations in Wisconsin, 2002–2003–2004

med med ow ΘŒ med BE 39.0 9 4 4 9 6 9 9 9 6 39.1 6/26.8 6/27.2 6/28.8 6/26.0 36.7 Richard (mid) Esker (mid) Ogle (mid)

ESKER is a licensed variety and Plant Variety Protection has been applied for. All seed sold must be labeled as ESKER

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REPRODUCE LOCALLY. Include form number and edition date on all	reproductions.	ORM APPROVED - OMB No. 0581-0055
U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE EXHIBIT E	Application is required in order to detect certificate is to be issued (7 U.S.C. 24 confidential until the certificate is issued.)	(21). The information is held
STATEMENT OF THE BASIS OF OWNERSHIP 1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
·	OR EXPERIMENTAL NUMBER	3. VARIETT RAIVIL
Wisconsin Alumni Research Foundation	X8179-1	ESKER
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)	5. TELEPHONE (Include area code)	6. FAX (Include area code)
614 Walnut Street	(608) 263-2500	(608) 263-1064
P.O. Box 7365 Madison, Wisconsin 53707-7365	7. PVPO NUMBER	05 00 132
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9. Is the applicant (individual or company) a U.S. national or a U.S. b	ased company? If no, give name of co	ountry. YES NO
10. Is the applicant the original owner? YES	NO If no, please answer one	of the following:
a. If the original rights to variety were owned by individual(s), is (a	are) the original owner(s) a U.S. Nationa	al(s)?
YES	NO If no, give name of count	ry
b. If the original rights to variety were owned by a company(ies),	is (are) the original owner(s) a U.S. bas NO If no, give name of countr	
11. Additional explanation on ownership (Trace ownership from origin	nal breeder to current owner. Use the re	verse for extra space if needed):
	•	
PLEASE NOTE:		
Plant variety protection can only be afforded to the owners (not licens	ees) who meet the following criteria:	
If the rights to the variety are owned by the original breeder, that penational of a country which affords similar protection to nationals of	erson must be a U.S. national, national of the U.S. for the same genus and specie	of a UPOV member country, or
If the rights to the variety are owned by the company which employ nationals of a UPOV member country, or owned by nationals of a c genus and species.	ed the original breeder(s), the company ountry which affords similar protection t	must be U.S. based, owned by a nationals of the U.S. for the same
3. If the applicant is an owner who is not the original owner, both the	original owner and the applicant must m	eet one of the above criteria.
The original breeder/owner may be the individual or company who direct for definitions.	ected the final breeding. See Section 4	1(a)(2) of the Plant Variety Protection
Annual of the December of Advantage And at 4005		

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provide and employer.

WISCONSIN ALUMNI RESEARCH FOUNDATION MEMORANDUM AGREEMENT

This Memorandum Agreement is entered into by and between each of the persons executing this Agreement below as an Inventor, or Author in the case of copyrightable materials, (hereinafter referred to collectively as "Inventor") and the Wisconsin Alumni Research Foundation (hereinafter referred to as "WARF"), a nonstock, nonprofit Wisconsin corporation.

WHEREAS, at least one of said persons referred to here in as Inventor is currently, or at the time of the creation of the Technology (referred to below), was associated with the University of Wisconsin-Madison (hereinafter referred to as the "University") as a faculty or staff member, employee, student or otherwise;

WHEREAS, WARF is the patent management agency of the University and as such is designated by the University to accept ownership of the Technology transferred to it because of Inventor's association with the University at the time the Technology was created;

NOW, THEREFORE, in consideration of the mutual promises set forth herein and other good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties agree as follows:

Section 1. <u>Declaration</u>.

Inventor declares that Inventor has invented, discovered, written, or otherwise created, either solely or jointly with others, certain technology identified by WARF Ref. No. P04397US "ESKER" OAT VARIETY. The technology, including any patentable, copyrightable or trademarkable subject matter contained therein, related biological or other materials or compounds, germplasm, know-how, drawings, supporting writings and records, computer software (including both object code and source code versions thereof), materials useful for design (for example, logic manuals, flow charts, and principles of operation), and the like created jointly or solely by Inventor shall be hereinafter referred to collectively as the "Technology."

Section 2. Warranties.

Inventor declares that Inventor has provided an accurate, complete and full disclosure of all information with respect to all aspects of the Technology of which Inventor is aware. Inventor further declares that no conflict exists with regard to the rights of third parties (e.g. entities with which Inventor has consulting agreements, sponsored research agreements, material transfer agreements, etc.) which would in any way restrict Inventor's ability to claim and to transfer to WARF all of Inventor's right, title, and interest in the Technology.

Section 3. Assignment.

Inventor hereby assigns to WARF all of Inventor's right, title, and interest in the Technology. Inventor agrees to execute any memoranda of assignment or other documents that WARF deems to be necessary or useful for recording purposes or otherwise establish and/or verify WARF's rights under the terms of this assignment. Inventor further agrees to provide, at WARF's request, samples of physical materials and copies of drawings, supporting writings and records, and computer software (including source code) useful or necessary to protect and practice the Technology.

Section 4. Consideration.

- A. Patent, Copyright or Other Property Rights. With respect to the Technology, WARF agrees to prepare, file, and prosecute such patent applications, applications for registration of copyright or trademark, plant variety protection or breeder's rights, or other intellectual property rights as WARF in its sole discretion deems prudent (hereinafter collectively referred to as the "Intellectual Property Rights"). WARF further agrees to exert such reasonable efforts to promote the Technology, whether by granting patent, trademark or copyright licenses or by pursuing commercialization through confidential disclosure arrangements or otherwise, as WARF may deem appropriate. WARF shall bear all of the expense WARF incurs in its attempts to obtain the Intellectual Property Rights and/or to license or otherwise generate income from the Technology. Inventor agrees to cooperate in the preparation and prosecution of any application for Intellectual Property Rights filed by or on behalf of WARF and in any litigation or other proceedings involving any such Intellectual Property Rights. If approved in advance, WARF will defray reasonable out-of-pocket travel, living and sundry expenses incurred by Inventor for such activities.
- В. Licensing and other Royalty Revenues. WARF agrees to pay to Inventor, and any joint inventors of the Technology who also assign the Technology to WARF, a total of twenty percent (20%) of the Net Royalty Revenues realized by WARF under the terms of any license under the Technology granted by WARF or from the sale of the Technology or any part thereof. "Net Royalty Revenues" shall be deemed to consist of monies actually received by WARF as a royalty under each agreement governing the sale or license of the Technology (e.g., as license fees, earned royalties or other cash proceeds from the sale of equity received by WARF in exchange for rights under the Technology) less: (1) any ordinary revenue deductions, such as taxes or royalty sharing payments made to third parties; and (2) any expenditures made by WARF in proceedings with third parties, such as interference proceedings, oppositions, reexamination proceedings (unless initiated by WARF independent of a third party challenge to a patent), litigation, and arbitrations and payments made in settlement of any such proceedings. Net Royalty Revenues shall not include sponsored research funds provided to the University by a Licensee, or reimbursements for domestic and foreign filing fees, maintenance fees and other patent, trademark or copyright expenses paid to WARF for the cost of filing, prosecuting, and maintaining domestic and foreign Intellectual Property Rights. Expenditures as described in (2) above incurred in any given year may be carried over by WARF and applied against money actually received by WARF in subsequent years until such expenditures are fully reimbursed. Money actually recovered by WARF with respect to any proceedings with third parties, which are not reimbursed expenses, shall be included in Net Royalty Revenues and shared when received by WARF, in the same way as royalties for a license granted under the Technology. If WARF receives equity in a licensee entity under the terms of a license agreement, such equity shall be held in WARF's name until such time as WARF, in its sole discretion, shall determine that the shares should be redeemed or sold. Such amounts shall then be added to Net Royalty Revenues shared with the Inventor. Payments due to the Inventor shall be allocated and made in the manner set forth in Section 5 herein.

Section 5. Allocation of Income and Payment.

A. Allocation. In the event WARF owns and licenses or sells more than one Intellectual Property Right with respect to the Technology, and/or licenses multiple technologies in the same contract, WARF shall have the right to allocate a proportion of any Net Royalty Revenues generated by such license to each separate Intellectual Property Right and/or technology. In any such case, all of the Inventors in the aggregate shall be considered a single entity for distribution of Net Royalty Revenues under Section 4B. Absent contrary, unanimous instructions in writing from the Inventor and any such

joint inventors, and subject to WARF's right to allocate a proportion of Net Royalty Revenues to each separate Intellectual Property Right and/or technology, the distribution of Net Royalty Revenues under Section 4B shall be divided equally among the Inventors.

B. Payment. Inventor is responsible for notifying WARF of his or her current address and for updating that information, as appropriate. WARF shall have discharged its obligations to any named Inventor if it directs payments to the Inventor at the last address provided to WARF by Inventor. However, if payment is not deliverable to the last address provided, WARF shall contact the chairperson, director or other head of the Inventor's department to attempt to obtain a current address for Inventor. If WARF is unable to obtain a current address by contacting Inventor's department, payments not deliverable will be held by WARF and be available to the Inventor, if claimed within one (1) year of the date of WARF's letter transmitting the original check. After one (1) year, uncashed checks from WARF to Inventor shall become void and WARF's payment obligation to Inventor shall be discharged. In the event that the Inventor contacts WARF with a current address after a period in which WARF had no current address for the Inventor, WARF shall resume paying royalties in the next calendar quarter but WARF is under no obligation to pay royalties for prior calendar quarters during which WARF had no current address for the Inventor. Any monies not paid out by WARF to Inventor will be paid to the department or center with which the Inventor was associated at the time the Technology was developed.

Section 6. <u>Improvements</u>.

Inventor agrees to disclose promptly and to assign to WARF all Improvements of any aspect of the Technology conceived of or made by Inventor as part of Inventor's activity as a faculty or staff member, employee, student or through other association with the University, either solely or jointly with another, while Inventor is still associated with the University and for six months thereafter. "Improvements" as used herein shall refer to all additional technology not a part of the Technology if such additional technology requires the use of any of the claims of any patent or patent application that covers all or any part of the Technology or constitutes a Derivative Work of a writing that forms a part of the Technology, together with any technology the practice of which is necessary to the commercial practice of the Technology, as defined above, including but not limited to patentable subject matter, biological materials, know-how, drawings, supporting writings and records, computer software (including source code), and the like. "Derivative Work" as used herein shall refer to any alteration, correction, modification, update, revision or enhancement of the Technology that corrects errors, supports new releases or operating systems, improves operability, supports new models or input/output devices with which the Technology is designed to operate, substantially improves functionality, or basic capability or otherwise updates the content of the Technology.

Section 7. <u>Technology Use by Inventor.</u>

- A. Continued Research. WARF and Inventor desire that Inventor and persons under Inventor's supervision, or working cooperatively with Inventor, shall be free to continue research in the field of the Technology. Therefore, nothing in this Agreement shall be deemed to restrict Inventor's right to use all or any part of the Technology for research and/or educational purposes, whether alone or in concert with another person or organization. No license to use the Technology for commercial purposes by the Inventor or the Inventor's sponsors is hereby granted either expressly or by implication.
- **B.** Publication. Nothing in this Agreement, shall be deemed to restrict Inventor's right to publish all or any part of Inventor's past, present, or future research results. However, Inventor agrees to

promptly notify WARF of all past publications disclosing the Technology or Improvements and to use Inventor's best efforts to notify WARF of all future publications disclosing the Technology or Improvements as far in advance of their publication as possible.

Section 8. <u>Miscellaneous</u>.

The parties hereto have executed this Agreement on the dates indicated below in witness of the obligations and rights set forth above. This Agreement shall inure to the benefit of and be binding upon the heirs, personal representatives, successors, and assigns of each of the parties. A party's interest in this Agreement may be assigned provided that the personal obligations to WARF of Inventor and any other inventor, author, other creator or contributor of and to the Technology shall continue without change. This Agreement shall be effective between WARF and each Inventor when both of them have executed this Agreement where indicated, below, without regard to the dates of signing of other Inventors.

Date: 14 20 2009

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

WISCONSIN ALUMNI RESEARCH FOUNDATION

WARF Representative: Michael Falk

Title: Director of Intellectual Property

Inventor Signature

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Date: 5-31-04

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